September 3, 2003

California Energy Commission
Attention: Docket No. 03-BSTD-1
Dockets Office
1516 Ninth Street, MS-4
Sacramento, CA 95814

RE: SB5X Outdoor Lighting
Standards Contract #400-01-023

The Supplemental Report Outdoor Lighting Research Models, California Outdoor Lighting Standards, June 25, 2002 prepared by Eley Associates for the California Energy Commission contains information and models which are contradictory to the Lighting Power Allowance for specific applications as found in Table 147-B, page 133 of the 2005 Building Energy Efficiency Standards, Express Terms, 45 day language. In the report dated June 25, 2002 under the section Outdoor Sales Canopies a 40' x 60' gasoline canopy 17' high was modeled with (16) 150-watt metal halide downlights. The average illumination achieved by this system according to Eley Associates (the CEC consultant) was "maintained average of over 20 foot-candles with extremely uniform illumination". Our applications engineering department constructed this same model in AGI-32 and by inputting the identical design criteria (55 mean lumen watts, light loss factor of .70 (LDD) and reflectance value of 0.80) we achieved a maintained average of 19.85, which is essentially identical to the Eley Associates results. The fixture watts for the 150-watt metal halide downlight is 185 watts when ballast loss is included. Sixteen fixtures x 185 watts each produces a total connected load of 2,960 watts. This value (2,960 watts) when divided by the area of the canopy (40x60=2,400) yields a power density of 1.25 watts per square foot. Our tests validated the Eley Associates model that a power density

of 1.25-watts/square foot would yield a maintained average illumination of 20 foot-candles.

This 1.25-watts/square foot power density allowance has been recommended by the consultants to the CEC as the value that should apply to gas stations and retail canopies that are located in lighting zone 3. Lighting zone 3 is the highest geographical lighting zone that exists and is defined as "core census block groups or blocks that have a population density of at least 1,000 people per square mile" as designated by the 2000 census. In the staff report dated July 2003 it is stated that:

> "The recommendations for allowed lighting power are based on current Illuminating Engineering Society of North America (IESNA) recommendations for the quality and design parameters of illumination, current industry practices…."

This statement is misleading and incorrect! Neither the IESNA or "current industry practice" would recommend that a gas station / retail canopy that is located in an urban environment (LZ3) should be designed utilizing 1.25 watts per square foot to achieve a maintained average illumination of 20 foot-candles. IESNA in their recommended practice RP-02-1, approved by the IESNA board of directors on March 3, 2001, states that the targeted maintained levels for a service station gas island/canopy located in an area where there is high illumination in the surrounding area should be 50 foot-candles. The IESNA in RP-02-1 goes on to define high illuminance surrounds as "high would be at the corner of a major intersection within an urban area or large community". This definition is consistent with the 2000 census description for lighting zone 3. Therefore the power density for lighting zone 3 should be increased to allow for the IESNA recommended illumination levels which are 2.5 times those values obtained in the Eley Associates model.

The staff report also contained the statement that their recommendations follow current practices. As the largest supplier of service station lighting in California and in North America this statement is incorrect. Industry practice 10 years ago was to place 400-watt canopy fixtures 12' on centers for a power density of 3.19-watts/sq. foot. This is significantly more than the 0.70 watts/sq. foot in zone 1, 1.00 watts/sq. foot in zone 2, and 1.25 watts/sq. foot in zone 3. Today utilizing non cut-off fixtures which will not be allowed if these regulations are adopted, a safe well illuminated retail gasoline facility can be achieved with a power density of 2-watts/square foot. When cut-off fixtures are mandated, as they currently are in the proposed regulations, a greater power density is required. Cut-off luminaries are not more energy efficient than non cut-off luminaries! More fixtures and more energy is required to create a safe and well lighted environment under a service station canopy when cut-off or full cut-off fixtures are specified.

IESNA guidelines for average maintained illuminance in areas with low illuminance in surrounding areas 20 fc should apply to LZ1, medium surrounding illuminance to LZ2 and high illuminance to LZ3. Owners should not have to petition the local jurisdiction to notify the Commission of changes in designations of sites in order to obtain light levels that IESNA recommends for urban areas.

These regulations if adopted as they are currently written will stop the eight-year trend of voluntary energy reduction in the lighting systems on retail gasoline facilities in California. If adopted there will be a minimal amount of energy saved on newly constructed retail establishments, while the current practice of upgrading existing 400 watt non cut-off fixtures with either 320 watt or 250 watt non cut-off fixtures will stop!

Owners will not invest in energy saving lighting systems that restrict the type of fixtures they can use, dramatically increases their capital costs, and places them at a competitive disadvantage in the marketplace. They will choose to only

clean and relamp their existing equipment and the opportunity to reduce the energy consumes in outdoor lighting in California's existing 11,258 retail gasoline facilities will be lost.

I urge the Commission to correct the models used to determine the allowable power density for all outdoor lighting in all lighting zones, follow the IESNA recommended practices for LZ1, LZ2 and LZ3 and to remove "replace more that 50% of the existing luminaries will be required to meet the requirements for newly installed equipment." Including this is counter productive, as it will cause owners to continue to operate existing equipment; foregoing proven energy saving solutions that would have saved 22%-37% in energy consumption in 11,258 existing facilities.

Sincerely,

John Page
Senior Vice President Sales

LSI Industries Inc. 10000 Alliance Road Cincinnati, Ohio 45242 (513) 793-3200 Fax (513)984-1335